

Estimation of the hadron contribution to $g_{\mu-2}$ using the IHEP total cross section database

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An up-to-date compilation of the world data on the $e^+e^- \rightarrow hadrons$ total cross section is used for dispersive evaluation of the leading order hadronic contribution to the muon anomalous magnetic moment $a_{\mu} = (g_{\mu} - 2)/2$. Our value $a_{\mu}(had, LO) = (696.2 \pm 1.9_{e^+e^- exp.} \pm 2.1_{syst.}) \times 10^{-10}$ is consistent with recent estimates by other groups. An impact of a recent $\sigma(e^+e^- \rightarrow \pi^+\pi^-)$ measurement by the CMD-3 experiment is discussed.

The SM prediction of a_{μ} including our $a_{\mu}(had, LO)$ estimate $a_{\mu}^{SM} = 11\,659\,184(4) \times 10^{-10}$ is in $\sim 4.7\sigma$ tension with the experimental value $a_{\mu}^{exp} = 11\,659\,205.9(2.2) \times 10^{-10}$ [FNAL g-2 Collaboration, Phys. Rev. Lett. 131, 161802 (2023)].

Presenter(s) : Dr ZENIN, Oleg (NRC KI – Logunov IHEP, Protvino)

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